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ABSTRACT

Computer assisted instruction (CAI) modules were developed to improve the reading comprehension skills of college students at Alabama A and M University. These modules were designed and tested to provide individualized instruction in a remedial reading program that was already operating at full capacity. Based on an informal assessment, it appears that CAI can be used effectively to supplement classroom experience in reading. (One portion of a module on finding the main idea is offered as an example of how the CAI modules are designed and used.) (Author/RL)

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COMPUTER ASSISTED INSTRUCTION: AN INNOVATIVE APPROACH TO THE DEVELOPMENT OF COMPREHENSION AT THE COLLEGE FRESHMAN LEVEL

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ABSTRACT

Computer assisted instruction modules were developed to improve the skill of comprehension in reading at the post-secondary level. These modules were designed and tested to provide individualized instruction. It appears that CAI can be fruitfully used to supplement classroom experience in reading.

INTRODUCTION

The "quasi-open door" admission policy at Alabama A & M University (AAMU) makes it possible for students of

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a variety of backgrounds to enter college. In order to satisfy its needs for accountability for those students, AAMU provides intensive support to assist the students in overcoming handicaps to educational progress. These efforts have especially focused upon the weaknesses of freshmen students in the area of basic skills.

A large number of the students who enter under the present admission policy have not mastered the proficiency level of reading skills necessary to cope with the requirements of the college learning environment, especially with regard to reading, thinking, and study skills. For example, most of the 682 freshmen who entered the University in the Fall of 1979 needed some assistance in reading as determined by the Nelson-Denny Reading Test, which is used for screening purposes. Those students with weaknesses in reading were required to enroll in the Reading Course during the school year.

A major goal of the AAMU Reading Program is to correct reading and study skill deficiencies before the students are overcome by the demands of college level work.

Assistance in reading is not available to these students other than through Freshman Reading.

The Reading Program is presently operating at full classroom capacity with freshmen students currently receiving three 50-minute periods of classroom instruction per week. Because of the wide range of individual

differences in cultural and experiential backgrounds, general achievement, and varied learning modalities, it is a great challenge to overcome years of accrued reading deficits. It is a fact that most students show substantial improvement by as much as two to four years growth in a single year.

Currently, instruction in the reading course is provided through the use of approximately 30 non-computerized instructional modules which have been developed to improve a variety of reading skills. These skills include: vocabulary, comprehension, critical reading, study skills and rate of comprehension.

The non-computerized modules are designed to include: a title; brief general description; statement of objectives; pre-test; text; practice exercises and post-test. Each module is designed to have three levels: Level A is prepared for the lowest level students with reading grade equivalents of 6, 7, and 8 as determined by the Nelson-Denny Reading Test. Level B is the middle level prepared for students with grade equivalents of 9 and 10. Level C is the highest one for students with a reading grade equivalent of 11.

Following the initial assignment to a section of Freshman reading, each student completes background information forms, interest inventories, writes an introspective essay and has an initial conference with his/her

instructor. All students are then given the Stanford Diagnostic Test to further diagnose strengths and weaknesses in reading. Next, each person is given an assignment sheet which lists all of the non-computerized modules which the student needs to complete in the course. The course work may extend for two semesters for some students. Upon completion of the course, each person receives a letter grade and three hours of course credit.

In a typical class session, the students enter the reading lab and remove their module assignment sheet from their activity folders. Next, they select the appropriate materials to be used in the completion of their work. Some of the modules are designed so that all of the information necessary for their completion are contained within the modules themselves. Others require workbooks, tapes, kits, machines or other resources for their successful completion. The instructor is available to help the student in locating the necessary materials, to clarify directions, and to provide any other assistance needed.

When they have selected their modules, the students then proceed to work through the activities at their own pace. Each module is designed to develop one skill, and usually requires 2-3 hours for completion. Modules which have been completed are placed in a box for the instructor

to grade and return to the student. If a student has not achieved at least 70% mastery of a particular skill, he is required to work through the module again. There are 25-30 students in most classes.

The present problem is that, due to large numbers of students in the classes, the instructors have limited time to work with individuals to insure that the remedial modules which they complete have been clearly understood. Those students who do not have at least 70% mastery of the modules are required to work through them a second time. During this process there is little or no constant interaction between instructors and students nor does time permit enough drill to be given until 100% mastery has been achieved. This results in some students achieving complete mastery while others achieve partial mastery of skills to be developed in the course.

It is believed that CAI modules will remedy the existing problem. With CAI, learning will be further enhanced through immediate feedback relating to appropriateness of each response. As each response is evaluated, the student advances step by step toward the mastery of skills. At each step appropriate instructions are given to the student related to his level of performance. If necessary he may be requested to do additional reading of text material

or he may be referred to his instructor. Repeated drills in skill areas may be provided for those who need additional practice.

Instruction is presented in small, well-defined units which are less intimidating to students than large blocks of material.

Because of the needs of freshmen students who entered AAMU, it was decided that, rather than attempt to adapt materials which had been developed at other institutions, (see references for some materials presently available) CAI modules appropriate to the needs of this student population would be developed.

This endeavor was undertaken as part of a three-year National Science Foundation Project at AAMU. The NSF CAUSE Grant provided for the purchase of a PDP 11/70 computer from the Digital Equipment Corporation and twelve interactive cathode ray tube terminals.

As the authors prepared to develop the initial computer assisted instructional modules in reading, it was determined that, because of the needs of the students, the best place to start was with the comprehension skills, especially the location of main ideas in paragraphs. Gilbert [6] has stated that one of the many skills a good reader develops is the ability to recognize and understand the main idea or central thought of material he has read.

The exercises in Breaking The Reading Barrier by Gilbert were chosen because of their previous use with AAMU students. It had been determined that these exercises were very effective in helping the students to understand main idea patterns in paragraphs.

The first CAI module was a general one in which an overview of the course and specific course objectives were given. The module included a list of the CAI modules which will eventually be available to the students in the area of comprehension.

The second module to be developed, and the focus of this research project was entitled, "Reading For the Main Idea In Paragraphs." The objective for the module was:

> Upon completion of this module the student should have improved his ability to recognize and understand the central thought or main idea in paragraphs.

The module was divided into three segments, as required by standard CAI module format. In segment 1, a pre-test followed the statement of the title and objective. This test was designed to measure the student's ability to identify the main idea in a paragraph prior to completing it. Moreover, it had been previously determined that all students needed this skill.

PRE-TEST

(To the student) The main idea may be found in the

first sentence of a paragraph, in the last sentence at the middle of the paragraph. It may be divided between two sentences or there may not be a main idea expressed in the paragraph at all. To test your ability to locate the main idea in a paragraph please identify the number of the sentence which contains the main idea in the following paragraph:

(To the student) First, read the paragraph.

1. The small town welcomes tourists. 2. A large sign at the beginning of main street says, "Welcome to our Town, we hope you enjoy your stay." 3. Policemen only issue courtesy tickets to tourists who overpark. 4. Free tours of local historical sites are given to all interested visitors.

(To the student) Directions

Now identify the numbered sentence which contains the main idea.

(To the student) Is it #1?

(If yes, then)

(To the student) Good! You were correct! Now answer the following questions with Yes or No

(If no, then)

(To the student) Sorry! You missed it! That sentence contains a detail which supports the main idea. Try again.

(To the student) Directions

Please answer Yes or No to the following:

1. Can the main idea of a paragraph appear in the last sentence?

(Correct Response) Yes

[If yes or no, then]

(To the student) Yes, the main idea can be in the last sentence of a paragraph.

(To the student) 2. Can the main idea be found in the middle of a paragraph?

[Correct Response] Yes

[If yes or no, then] Yes, the main idea can be in the middle of a paragraph.

(To the student) Now answer the next question.

(To the student) 3. Can the main idea be divided between two sentences?

[Correct Response] Yes

[If yes or no, then]

(To the student) Yes, the main idea can be divided between two sentences. For example, sometimes a question is asked in one sentence and answered in another sentence. Both sentences combined state the main idea.

(To the student) 4. Is it possible to have a paragraph which does not contain a main idea?

[Correct Response] Yes

[If yes or no, then]

(To the student) Yes, there may be a group of related sentences which present details, but which do not contain a main idea.

(To the student) 5. Can the main idea be stated in the first sentence of a paragraph?

[Correct Response] Yes

[If yes or no, then] Yes, the main idea is usually found in the first sentence of a paragraph.

Segment 2 of the module contained the text. In this section, the rationale for distinguishing the main idea from supporting details was given, in addition to clues to the location of the main idea. Then an example of each of the five paragraph patterns was presented.

Segment 3 of the module was the test section in which ten paragraphs were given for practice in identifying the main idea. The number of correct responses, the number of trials and the percentage of accuracy were given for the ten paragraphs. Eighty percent mastery was considered satisfactory.

Five interested students from three of the reading classes were introduced to the CAI module which was developed. Each person sat at the terminal console and typed a response to the questions asked by the computer. The students' responses were evaluated and appropriate directions were given as they completed the three segments of the main idea module. The terminal presently available with the PDP 11/70 is of the tele- type, which required the student to read the information from a printed sheet.

A thirteen item questionnaire related to the students' experience with the CAI module was developed for evaluation purposes. Each student completed this questionnaire upon completion of the module.

Although the results are not conclusive because of

the small sample, the students responses provided interesting aspects of using CAI for reading skills development at the college level. The results were as follows:

Most of the students responded favorably to their learning experience with CAI and felt that there was a net gain in the ability to identify the main idea in paragraphs.

The students like the CAI module for its drill and directions for finding the correct answer.

It appears that CAI can be fruitfully used to provide individualized experience in reading skills development to supplement the classroom instruction.

Future progress will be presented after the completion of the modules in this area and their evaluation.

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